

Montgomery County, Maryland

GIS and Agricultural Preservation: An Agricultural Land *e*-valuation Program

Program Category: Information Technology

1. Abstract

An automated Agricultural Land *e*-valuation Program was developed jointly between the Department of Information Systems and Telecommunications Geographic Information Systems (GIS) Team and the Department of Economic Development (DED) Agricultural Services Division. This program allowed the Agricultural Services planners to view, select, evaluate and map parcels of land that are to be considered for agricultural easements and other protection programs.

2. Need for the Program

Montgomery County, Maryland has seen a rapid growth of residential and business development since the end of WWII. In 1969, Montgomery County began taking measures to provide for the protection of agricultural land and the preservation of open space. By 1979 the conclusion was reached that the temptation to take advantage of the greater monetary value of development would need to be countered with financial incentives for preservation. The County implemented the Preservation of Agricultural and Rural Open Space program which along with Zoning changes created Rural Density Transfer Zones and Transfer Development Rights areas, this enabled farmers who had development rights to sell to those in a receiving zone who wanted to increase densities in selected areas. The success of these programs gave rise to the adoption of agricultural easement programs at both the county and state level. Initially the DED Agricultural Services group approached the GIS Team to create the maps that the State of Maryland required for easement submissions. After automating the mapping, the next logical step was to automate the whole process. Prior to the creation of the Agricultural Land *e*-valuation Program this was primarily a manual process. This automated program allows selected properties to be considered for easements based on the many factors that must be considered. The automation of this selection and evaluation process was completed in 1999.

3. Description of the Program

In July of 1997 the GIS team was approached by the DED Agricultural Services Division to provide mapping services. We did a “quick and dirty” cleanup of the data provided in order to produce some county -wide maps for display purposes. In 1998 the State of Maryland required specific types of maps for proposed Agricultural easements. Using 200 scale background data we digitized the Rural Legacy Program boundaries and the Rural Density Transfer Zone. We then extracted the properties that fell within these areas to use in the creation of our database. Using editing programs developed in-house, DED staff then

attributed those parcels that had some form of protection already existing. We now were able to create accurate 200 scale and county-wide maps for display and analysis. We then added in data from various sources (see section 4, below) and created mapping programs that allowed a user to select a property and get maps of the land-use and land capabilities. The next stage consisted of adding and geo-correcting data for use in more sophisticated statistical analysis, such as waterway buffer types and values or the amount of contiguous protected lands. The final stage of this project consisted of including an economic model that was developed by DED, the Rural Legacy Easement Valuation Sheet. This enabled us to enter data generated by the GIS statistical analysis during the previous stages to determine the final cash value of the Rural Legacy Program easement. With this GIS modeling package the entire process, from selecting the study property to the determination of a final easement cash value can be done in less than 20 minutes. This allows far more properties to be studied and considered for this critical Agricultural Protection program.

4. Use of Technology

This program utilized: GIS software (Arc/Info and ArcView)

Unix Workstations

PC's

MDAT - property database

MDNR - protected habitats

NRCS - soils database

NRCS - wetlands database

USGS - hydrology database

MOP - landuse database

MCMAPS - planimetric databases

5. The Cost of the Program

Hardware, software, and plotting supplies used for the program were part of the on-going operating budget of the GIS Team. Staff time for the initial development is estimated at four weeks of GIS software analyst's and 4 weeks time of data entry and creation of evaluation sheet by the Agricultural Services planners.

At the end-user side, a Pentium II 350 MHz or higher PC (Windows 9x or NT) is recommended, with proper network interface card to communicate with the GIS LAN. An 'inkjet' printer (\$200 - \$500) will produce hardcopy maps.

6. The Results/Success of the Program

The success of this program can be measured in three ways. The time it takes for a complete study and evaluation of a parcel of land has been reduced from approximately 40 hours to less than 20 minutes, it can be assumed that since the process is faster we can evaluate more properties that are under consideration. With 10 to 15 studies done each year that translates into a average savings of over 495 person hours per year (about 3 months). The second measure is that we have been able to negotiate to protect an additional 1,687 acres of

agricultural land. The final measure of success is that in the two years we have been doing this we have received over 6.5 million dollars in funds for agricultural preservation.

7. Worthiness of an Award

Since the inception of Agricultural Preservation in Montgomery County in 1969, We have tried many innovative methods of protecting our open spaces. These have been so successful they have been studied and copied by other jurisdictions across the United States of America. The automating of the Agricultural Land *e*-valuation Program is another step in the important process of protecting America's farmland.